

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals: Process Plan: 21 8-30

Date: AUG 31 2016

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

D119-796-241

I

Document Control

0.00

110

DC

Memo

0.00

Doc Control - USB or Paperwork

Photocopy bluefile and create labels as per PPP D119-796-241 chg 004

120

120

Packaging

Memo

0.00

Packaging

130

130

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.31

CNC Alpha 160 Bender

Bend tube as per Dwg D119-796-241 using CNC bender program

21 8-30 DEC 02 2016

16-11-02

16-11-02

DQA:

Date: _____

QA Closed:

Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only



Work Order: _____		AGAINST DEPARTMENT/PROCESS		Engineering	
Part No. _____		Cross tube		Quality	
NCR No. _____		Small Fab		Other	
Date: _____		Thermoforming		Water Jet	
Step #: _____		Large Fab		Prod. Eng. Coord.	
Description Work Order Deviation		Suspected Unapproved		Rec/Store/Packaging	
Disposition		QTY Effective: _____		Supplier	
Completed By		MRB (QS1042) Approval			
Lead hand / Supervisor Approval Verification					
QC / QA Coordinator Approval					

Root Cause				FAULT CATEGORY			
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/ Surge	Positioned Wrong		
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions		
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance		
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect		
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing		
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved		
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing		
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish		
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread		
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence		
Past Expiry Date	Manufacturing Process						
Misidentified	Past Due						
OTHER :							

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241 Accept *N900040100* Setup Start *NS1*

Revision ID: AFT Crosstube Installation without Step (no hardware) Stop *NS2*

Item Name: AFT Crosstube Installation without Step (no hardware)

Start Date: 8/8/2016 Start Qty: 1.00 *1*

Required Date: 9/1/2016 Req'd Qty: 1.00 *1*

Reference: Cust Item ID: Customer: Run Start *NR1*

Approvals: Process Plan: Date: Tooling: SPC (Y/N): Date: Stop *NR2*

QC: Date: QC15- Crosstube Dimensional Check Set Up/ Run Hours Tool ID Tool # Plan Code Accept Qty Reject Qty Reject Number Insp. Stamp

140 *140* QC Memo 0.00 0.00 1 38 8-89

Quality Control NOV 09 2016

145 0.00

145

Crosstubes

Crosstubes

Memo

1- CUT TUBE AT HEIGHT ON PAI SHEET

2- VERIFY HEIGHT: 25.0 IN

BY QC15 LEVEL INSPECTOR

3- DEBURR CUT SURFACE

16-11-07

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____

Date: _____

Work Order update only ☐

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____		Rework _____ Scrap _____ Use-as-is _____		Cross tube _____ Small Fab _____ Finishing _____ Composite _____		Water Jet _____ Prod. Eng. Coord. _____ Rec/Store/Packaging _____ Supplier _____		Engineering _____ Quality _____ Other _____			
NCR No. _____		Suspected Unapproved _____		Skid-tube _____ Machining _____ Thermoforming _____ Large Fab _____							
Date: _____		Step #: _____		QTY Effective: _____				MRB (QS1042) Approval			
Description Work Order Deviation				Disposition				Completed By			
								Lead hand / Supervisor Approval Verification			
								QC / QA Coordinator Approval			
Root Cause				FAULT CATEGORY							
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/Surge	Positioned Wrong						
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions						
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance						
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect						
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing						
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved						
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing						
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish						
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread						
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence						
Past Expiry Date	Manufacturing Process										
Misidentified	Past Due										
				OTHER: _____							

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241

Accept

Revision ID:

N9000040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

150

150

Crosstubes

Memo

0.12

***** ENSURE PROPER JIG POSITIONING *****

1-DRILL TUBE AS PER DWG USING DT10087

2- DRILL RIVET HOLES USING DT8787 FWD

3- DEBURR AND CSINK RIVET HOLES AS PER DWG

4- FLIP TUBE, REPEAT STEP 2 AND 3

5- SCRIBE PART# AND BATCH# USING VIBRATING STYLUS ON INSIDE
OF CUFF AS PER DWG D119-796-141

1002 16-11-10
/ 2

Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

OA Closed: _____ Date: _____

Work Order update only

[illegible]

Work Order ID 150596

150596

Monday, August 29, 2016 2:44:52 PM

Page 4

Item ID: D119-796-241

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2016

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

160

HandFXtube

Hand Finishing Crosstubes

0.07

Memo
1- INSPECT AND REMOVE ALL MARKS FROM TUBE WITHIN LIMITS
ON DWG D119-796-141

IMMEDIATELY AFTER GRINDING

2- PRESSURE WASH X-TUBE INSIDE AND OUT

3- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005.

4- Verify grinding marks

By:

9-89

170

170

QC

Quality Control

QC7-Inspect Chemical Conversion Coat

0.00

Memo

0.00

NS 16-11-11

DR 16-11-11

DQA:

Date: _____

QA Closed:

Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION ☐ Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐ Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier		AGAINST DEPARTMENT/PROCESS ☐ Engineering ☐ Quality ☐ Other ☐ MRB (QS1042) Approval			
Date: _____ Step #: _____		QTY Effective : _____					
Description Work Order Deviation		Disposition					
		Completed By _____					
		Lead hand / Supervisor Approval Verification					
		QC / QA Coordinator Approval					

Root Cause		FAULT CATEGORY									
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/ Surge	Positioned Wrong						
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions						
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance						
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect						
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing						
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved						
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing						
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish						
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread						
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence						
Past Expiry Date	Manufacturing Process										
Misidentified	Past Due										
		OTHER : _____									

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241 Accept *N900040100* Setup Start *NS1*
Revision ID: AFT Crosstube Installation without Step (no hardware) Stop *NS2*
Item Name: AFT Crosstube Installation without Step (no hardware)
Start Date: 8/8/2016 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 9/1/2016 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	Packaging	0.00							
Memo									
Ensure copy of NDT results attached to work order.									

200 QC5- Inspect part completeness to step on W/O 0.00
QC *200*
Quality Control Memo 0.00
*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***
Inspect for damage & ensure results are as per Dwg D119-796-241
NOV 15 2016

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS				Engineering Quality Other	
Part No. _____		Rework ☐ Scrap ☐ Use-as-is ☐		Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐		Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐			
NCR No. _____		Suspected Unapproved ☐		Skid-tube Machining ☐ Thermoforming ☐ Large Fab ☐					
Date: _____		Step #: _____		QTY Effective: _____				MRB (QS1042) Approval	
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐								
		OTHER :							

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID:	D119-796-241	Accept	*N9000040100*	Setup	Start	*NS1*
Revision ID:					Stop	*NS2*
Item Name:	AFT Crosstube Installation without Step (no hardware)					
Start Date:	8/8/2016	Start Qty:	1.00	*1*	Cust Item ID:	
Required Date:	9/1/2016	Req'd Qty:	1.00	*1*	Customer:	
Reference:						

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	*NR1*
	QC:	Date:	SPC (Y/N):	Date:	Stop		*NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	SprayPaint	0.00							41 DAS

2220 SprayPaint Memo 0.05
 ***VERIFY BY DAS BATCH # TO MATCH W/O
150596
 ***VERIFY BY 41 PART # TO MATCH
 W/O 150596 8-80
 MASK SCRIBE B# & P# AND VERIFY
 1- Prime Inside of tube.
 2- Install nut plates as per dwg (D2873-043)
 3- Mask cuffs per note#2.
 4- Prime exterior of tube per QSI005.
 Primer Batch: 135953
 Start Time: 2:00
 Finish Time: 2:30

16-11-17

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date:

Work Order update only

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework Scrap Use-as-is Suspected Unapproved		AGAINST DEPARTMENT/PROCESS Skid-tube Machining Thermoforming Large Fab Cross tube Small Fab Finishing Composite Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier Engineering Quality Other							
Date : _____		Step #: _____		QTY Effective : _____							
Description Work Order Deviation				Disposition							
Completed By				Lead hand / Supervisor Approval Verification							
								QC / QA Coordinator Approval			
Root Cause				FAULT CATEGORY							
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Positioned Wrong							
Design	Operator	Bending	Set-up	Power Loss/Surge							
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Folio/Program							
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Grain							
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Weld							
Material	Use for Testing	Cuffs	Contamination	Wrong Stock Pulled							
Internal Transport	Poor Information	Crushing	Countersink	Out of Sequence							
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Off-set							
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Mislabeled							
Substation	Process Improvement	Marks/Chatter	Drill Holes	Fit/Function							
Past Expiry Date	Manufacturing Process			Misaligned/off center							
Misidentified	Past Due			Turning Sequence							
OTHER : _____											

Work Order ID 150596

150596

Monday, August 29, 2016 2:44:52 PM

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop *NS2*

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan
Code

Accept Qty Reject Qty Reject Number Insp.
Stamp

240 QC14- Inspect Spray Paint 0.00

240

QC

Memo
***VERIFY BY JB BATCH # TO MATCH W/O
***VERIFY BY JB PART # TO MATCH
W/O 150596

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: AFT Crossrube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2016

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

242

242

Crossrubes

Crossrubes

Memo

0.26

Assemble as per dwg D119-796-241 and OSI

1- Abrade mating surfaces with Scotch Brite 7447 and clean with Dupont 4105s or equivalent as per dwg.

2- Install D5152-043 with proseal 890 on concave surface, 0.100" MIN thick as per dwg using DT10112 (identified righ and left)

*****MAINTAIN CLAMPING PRESSURE ON FOR MIN 72HRS*****

Proseal Batch: 136076

EXP: 5/17

PROSEAL CURE TIME 72 HOURS:

Start: 16-11-24

Finish: 16-11-27

3- Install center support without bonbing.

4- Install Damper support and contact pads using proseal 890 per dwg and clamp in position.

Proseal Batch: 136076

EXP: 5/17

PROSEAL CURE TIME 72 HOURS:

Start: 16-11-24

Finish: 16-11-27

16-11-24

41

8-89

Work Order ID 150596

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Monday, August 29, 2016 2:44:52 PM

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop *NS2*

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool #

Plan Code

Accept Qty

Reject Qty

Reject Number

Insp. Stamp

244

QC5- Inspect part completeness to step on W/O

0.00

244

QC

Memo

***VERIFY BY 150596 08 38 9-89 BATCH # TO MATCH W/O

***VERIFY BY 150596 08 38 9-89 PART # TO MATCH W/O

NOV 25 2016

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____

Date: _____

Work Order update only

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____		Rework Scrap Use-as-is Suspected Unapproved		Skid-tube Machining Thermoforming Large Fab		Cross tube Small Fab Finishing Composite		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier		Engineering Quality Other	
NCR No. _____		Step #: _____		QTY Effective: _____						MRB (QS1042) Approval	
Date: _____		Description Work Order Deviation		Disposition						Completed By	
										Lead hand / Supervisor Approval Verification	
										QC / QA Coordinator Approval	

Root Cause				FAULT CATEGORY											
Environment		No Re-verification		Pressure/Forced		Temperature/Cure		Power Loss/Surge		Positioned Wrong		Outside Dimensions			
Design		Operator		Bending		Set-up		Folio/Program		Over/Under tolerance		Part Incorrect			
Doc/Data		Offset/Setup		Centre Not Concentric		BOM/Route		Grain		Wrong Stock Pulled		Part Lost/Missing			
Equip/Tooling		Supplier		Cracks		Broken/Damage/Defect		Weld		Out of Sequence		Part Moved			
Handling/Pre		Training		Crimp/Kink/Ripple/Wave		Inspection Incomplete/Unqualified		Wrong Stock Pulled		Off-set		Drawing			
Material		Use for Testing		Cuffs		Contamination		Out of Sequence		Mislabeled		Finish			
Internal Transport		Poor Information		Crushing		Countersink		Off-set		Fit/Function		Misread			
Tribal Knowledge		Rushing		Heat Treat		Cut Too Short		Mislabeled		Misaligned/off center		Turning Sequence			
LOA		Product Improvement		Wave/Twist in Tube		Instructions Incomplete/Unclear		Fit/Function							
Substation		Process Improvement		Marks/Chatter		Drill Holes									
Past Expiry Date		Manufacturing Process													
Misidentified		Past Due													
				OTHER : _____											

Work Order ID 150596

150596

Monday, August 29, 2016 2:44:52 PM

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Item ID: D119-796-241

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: AFT Crosscube Installation without Step (no hardware)

Stop *NS2*

Start Date: 8/8/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: QC: _____

Date: _____

Tooling: SPC (Y/N): _____

Date: _____

Run

Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

246

Spray Painting per QSI005 4.2

0.00

246

Spray Paint

Spray Painting

Memo

***VERIFY BY QITB BATCH # TO MATCH W/O

***VERIFY BY QITB PART # TO MATCH W/O

MASK SCRIBE B# & P# AND VERIFY

1- Remove all non-fixed hardware and clean any excess proscal.

2- Scuff tube with Scotch Brite 7447.

3- Mask cuff per note#2.

4- Prime as per dwg and QSI005

Primer Batch: 135753

Start Time: 3:40

Finish Time: 4:40

5- Apply matte clear as per dwg and QSI005

Clear Batch: 135516

Start Time: 5:40

Finish Time: 5:30

QITB
16-11-28



DQA: _____ Date: _____
QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Date : _____		Step #: _____		QTY Effective : _____		MRB (QS1042) Approval					
Description Work Order Deviation		Disposition						Completed By			
										Lead hand / Supervisor Approval Verification	
										QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY									
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/Surge	Positioned Wrong						
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions						
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance						
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect						
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing						
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved						
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing						
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish						
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread						
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence						
Past Expiry Date	Manufacturing Process										
Misidentified	Past Due	OTHER : _____									

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241

Revision ID:

Item Name: AFT Crosstube Installation without Step (no hardware)

Start Date: 8/8/2016

Required Date: 9/1/2016

Reference:

Accept

N900040100

Setup Start

NS1

Stop

NS2

Cust Item ID:

Customer:

Approvals: Process Plan:

QC:

Date:

Tooling:

SPC (Y/N):

Date:

Run

Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

248 Spray Painting per OSI005 4.2

0.00

248
SprayPaint

Memo

0.10

***VERIFY BY DAS BATCH # TO MATCH W/O

***VERIFY BY 41 PART # TO MATCH

W/O 150596 8-89

MASK SCRIBE B# & P# AND VERIFY

1- Mask underside of tube as per dwg. Mask cuff per note#2.

2- Scuff tube with Scotch Brite 7447

3- Paint outside of cross tube

Paint Batch: 136040

Start Time: 700

Finish Time: 805

16-11-29

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____ Date : _____		Step #: _____ QTY Effective : _____		AGAINST DEPARTMENT/PROCESS Skid-tube Machining Thermoforming Large Fab Cross tube Small Fab Finishing Composite Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier Engineering Quality Other			
				MRB (QS1042) Approval			
Description Work Order Deviation		Disposition					
				Completed By			
				Lead hand / Supervisor Approval Verification			
				QC / QA Coordinator Approval			

Root Cause		FAULT CATEGORY									
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/Surge	Positioned Wrong						
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions						
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance						
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect						
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing						
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved						
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing						
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish						
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread						
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence						
Past Expiry Date	Manufacturing Process										
Misidentified	Past Due										
		OTHER : _____									

Work Order ID 150596

Monday, August 29, 2016 2:44:52 PM

150596

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop *NS2*

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan
Code

Accept Qty Reject Qty Reject Number Insp. Stamp

250

QC14- Inspect Spray Paint

0.00

250

QC

Crosstubes

Memo

DAS 38

0.00

Quality Control

***VERIFY BY 08-89 BATCH # TO MATCH W/O

150596 38 PART # TO MATCH
***VERIFY BY 08-89
W/O 150596

DAS 38
NOV 30 2016

252

252

Crosstubes

Crosstubes

Memo

0.17

1- Re-install non fixed hardware per dwg

Torque clamps on damper and contact pad to 80-100 IN-LBS.

2- Apply a fillet-seal of proseal 890 around damper supports and contact pads.

Allow proseal to dry before inspecting.

Proseal 890

Batch: 136076

EXP: 5/17

PROSEAL CURE TIME 72 HOURS:

Start: 11/11/16

Finish: 11/16/16

DAS 41
9-88
16-11-30

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only



Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS				Work Order update only	
Part No. _____		Rework ☐ Scrap ☐ Use-as-is ☐		Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐		Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐		Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐	
NCR No. _____		Suspected Unapproved ☐							
Date: _____		Step #: _____		QTY Effective: _____				MRB (QS1042) Approval	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause				FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under Tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐								
		OTHER :							

Work Order ID 150596

150596

Monday, August 29, 2016 2:44:52 PM

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

NR1

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan
Code

Accept Qty

Reject Qty

Reject Number

Insp. Stamp

260 QC5- Inspect part completeness to step on W/O

0.00

260

QC

Memo

0.00

Quality Control

RE-CHECK TORQUE ON CLAMP AFTER PROSEAL HAS CURED AS PER DWG.

1- ATTACH A RED TAG TO CENTER SUPPORT THAT READS

"CENTER SUPPORT NOT FIXED"

THEN DATE AND STAMP IT.

***VERIFY BY

150596

***VERIFY BY

W/O 150596

BATCH # TO MATCH W/O

PART # TO MATCH

290

290

Packaging

Packaging

Packaging

Memo

Identify and pack for shipping as per PPP D119-796-241

150986

1

16-12-02

DEC 12 2016

[illegible]

Work Order ID 150596

150596

Monday, August 29, 2016 2:44:52 PM

Item ID: D119-796-241

Accept

Revision ID:

N900040100

Setup Start

NS1

Item Name: AFT Crosstube Installation without Step (no hardware)

Stop

NS2

Start Date: 8/8/2016

1

Cust Item ID:

Required Date: 9/1/2016

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

300

OC21 - Final Inspection - Work Order Release

0.00

3000

QC

Memo

0.02

Quality Control

DAS
21
9-89
DEC 02 2016

ATP.12-02

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____

Date: _____

Work Order update only

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____		Rework Scrap Use-as-is Suspected Unapproved		Skid-tube Machining Thermoforming Large Fab		Cross tube Small Fab Finishing Composite		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier		Engineering Quality Other	
NCR No. _____		Step #: _____		QTY Effective : _____		MR8 (QS1042) Approval					
Date : _____		Description Work Order Deviation		Disposition		Completed By					
						Lead hand / Supervisor Approval Verification					
						QC / QA Coordinator Approval					

Root Cause				FAULT CATEGORY															
				Pressure/Forced				Temperature/Cure				Power Loss/Surge				Positioned Wrong			
				Bending				Set-up				Folio/Program				Outside Dimensions			
				Centre Not Concentric				BOM/Route				Grain				Over/Under tolerance			
				Cracks				Broken/Damage/Defect				Weld				Part Incorrect			
				Crimp/Kink/Ripple/Wave				Inspection Incomplete/Unqualified				Wrong Stock Pulled				Part Lost/Missing			
				Cuffs				Contamination				Out of Sequence				Part Moved			
				Crushing				Countersink				Off-set				Drawing			
				Heat Treat				Cut Too Short				Mislabeled				Finish			
				Wave/Twist in Tube				Instructions Incomplete/Unclear				Fit/Function				Misread			
				Marks/Chatter				Drill Holes				Misaligned/off center				Turning Sequence			
OTHER : _____																			
Environment				No Re-verification				Temperature/Cure				Power Loss/Surge				Positioned Wrong			
Design				Operator				Set-up				Folio/Program				Outside Dimensions			
Doc/Data				Offset/Setup				BOM/Route				Grain				Over/Under tolerance			
Equip/Tooling				Supplier				Broken/Damage/Defect				Weld				Part Incorrect			
Handling/Pre				Training				Inspection Incomplete/Unqualified				Wrong Stock Pulled				Part Lost/Missing			
Material				Use for Testing				Contamination				Out of Sequence				Part Moved			
Internal Transport				Poor Information				Countersink				Off-set				Drawing			
Tribal Knowledge				Rushing				Cut Too Short <td colspan="4">Mislabeled</td> <td colspan="4">Finish</td>				Mislabeled				Finish			
LOA				Product Improvement				Instructions Incomplete/Unclear				Fit/Function				Misread			
Substation				Process Improvement				Drill Holes				Misaligned/off center				Turning Sequence			
Past Expiry Date				Manufacturing Process															
Misidentified				Past Due															

Picklist Print

Monday, August 29, 2016 2:44:51 PM

Work Order ID: 150596

150596

Parent Item: D119-796-241

D119-796-241

Parent Item Name: AFT Crosstube Installation without Step (no hardware)

Start Date: 8/8/2016

Required Date: 9/1/2016

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP REV:A 14.09.03 NEW ISSUE DD VERF:JLM IPP
REV:B 14.10.15 AS PER REV.B DD VERF:JLM IPP REV:C
14.11.19 AS PER REV.C DD VERF:JLM IPP REV:D 14.12.12
AS PER REV.pd1 DD VERF:JLM IPP REV:E 15.02.11 AS PER
REV F JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D119-796-241TRN

Manufactured No

Each 0.0000

1

D119-796-241TRN

B146547

**

16-11-03

Crosstube Turning Detail

D2873-043

Manufactured No

Each 75.0000

4

D2873-043

**

DAS 41 16-11-17
8-89

Nut Plate Assembly

Location 149800

Loc Qty

Loc Code

4

LG050

75

146581

45

148548

30

Each

14.0000

1

D5122-1

Manufactured No

**

DAS 41 16-11-18
8-89

Center Support, Upper

Location

Loc Qty

Loc Code

LG053

2

143431

2

LG054

12

146838

12

1

DQA:

Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date: _____

Work Order update only

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____		Rework Scrap Use-as-is Suspected Unapproved		Skid-tube Machining Thermoforming Large Fab		Cross tube Small Fab Finishing Composite		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier		Engineering Quality Other	
NCR No. _____		Step #: _____		QTY Effective : _____		MRB (QS1042) Approval					
Date : _____		Description Work Order Deviation		Disposition		Completed By					
						Lead hand / Supervisor Approval Verification					
						QC / QA Coordinator Approval					

Root Cause				FAULT CATEGORY											
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/Surge	Positioned Wrong										
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions										
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance										
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect										
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing										
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved										
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing										
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish										
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread										
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence										
Past Expiry Date	Manufacturing Process														
Misidentified	Past Due														
				OTHER : _____											

Picklist Print

Monday, August 29, 2016 2:44:51 PM

Work Order ID: 150596

Parent Item: D119-796-241

Parent Item Name: AFT Crosscube Installation without Step (no hardware)

150596

D119-796-241

Start Date: 8/8/2016

Required Date: 9/1/2016

Start Qty: 1.00

Required Qty: 1.00

D5123-1 Manufactured No

Each

46.0000

6

D5123-1

Clamp Cushion

Location

150113

Loc Qty

LG054

44

Loc Code

144638
146761

8
36

prelim

2

115257

2

D5123-5 Manufactured No

Each

22.0000

2

D5123-5

Clamp Cushion

Location

LG054

22

Loc Code

144625

22

Each

Each

9.0000

1

D5134-041

Damper Support Assembly, LH

Manufactured No

Loc Qty

Loc Code

Location

150234

Loc Qty

Loc Code

LG54

9

143421

1

146828

8

Each

Each

8.0000

1

D5134-042

Damper Support Assembly, RH

Manufactured No

Loc Qty

Loc Code

Location

150329

Loc Qty

Loc Code

LG054

8

146887

8

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS									
Part No. _____		Rework Scrap Use-as-is		Cross tube Small Fab Finishing Composite		Skid-tube Machining Thermoforming Large Fab		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier		Engineering Quality Other			
NCR No. _____		Suspected Unapproved											
Date: _____		Step #: _____		QTY Effective: _____						MRB (QS1042) Approval			
Description Work Order Deviation				Disposition									
												Completed By	
												Lead hand / Supervisor Approval Verification	
												QC / QA Coordinator Approval	
Root Cause				FAULT CATEGORY									
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/Surge	Positioned Wrong								
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions								
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance								
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect								
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing								
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved								
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing								
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish								
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread								
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence								
Past Expiry Date	Manufacturing Process												
Misidentified	Past Due												
				OTHER : _____									

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only



Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS				Work Order update only			
Part No. _____		Rework Scrap Use-as-is		Skid-tube Machining Thermoforming Large Fab		Cross tube Small Fab Finishing Composite		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier			
NCR No. _____		Suspected Unapproved									
Date: _____		Step #: _____		QTY Effective: _____				MRB (QS1042) Approval			
Description Work Order Deviation				Disposition				Completed By			
								Lead hand / Supervisor Approval Verification			
								QC / QA Coordinator Approval			
Root Cause				FAULT CATEGORY							
Environment	No Re-verification	Pressure/Forced	Temperature/Cure	Power Loss/ Surge	Positioned Wrong						
Design	Operator	Bending	Set-up	Folio/Program	Outside Dimensions						
Doc/Data	Offset/Setup	Centre Not Concentric	BOM/Route	Grain	Over/Under tolerance						
Equip/Tooling	Supplier	Cracks	Broken/Damage/Defect	Weld	Part Incorrect						
Handling/Pre	Training	Crimp/Kink/Ripple/Wave	Inspection Incomplete/Unqualified	Wrong Stock Pulled	Part Lost/Missing						
Material	Use for Testing	Cuffs	Contamination	Out of Sequence	Part Moved						
Internal Transport	Poor Information	Crushing	Countersink	Off-set	Drawing						
Tribal Knowledge	Rushing	Heat Treat	Cut Too Short	Mislabeled	Finish						
LOA	Product Improvement	Wave/Twist in Tube	Instructions Incomplete/Unclear	Fit/Function	Misread						
Substation	Process Improvement	Marks/Chatter	Drill Holes	Misaligned/off center	Turning Sequence						
Past Expiry Date	Manufacturing Process										
Misidentified	Past Due										
OTHER : _____											

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

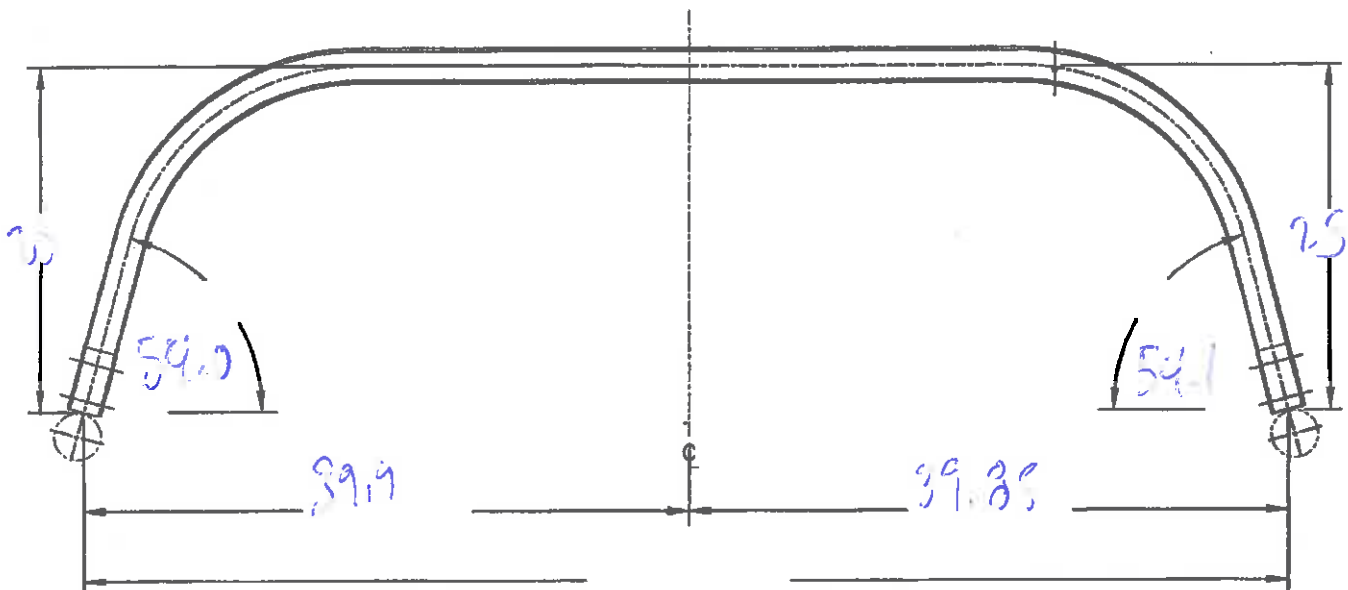
QA Closed: _____ Date: _____

Work Order update only

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐ Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐		AGAINST DEPARTMENT/PROCESS QTY Effective : _____ Step #: _____ MRB (QSI042) Approval _____		_____	
Description Work Order Deviation		Disposition		_____			
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DART AEROSPACE LTD		Work Order:	150596
Description: Crosstube Aft, with Step		Part Number:	D119-796-241
Inspection Dwg: D119-796-241 Rev: I		Page 1 of 1	

Required Dimension	Min	Max
Height	24.840	25.100
1/2 Span	39.810	40.070
Angle	54°	57°
Total Span	79.620	80.140
Bending Passes	8	--
Crushing	--	8.5%



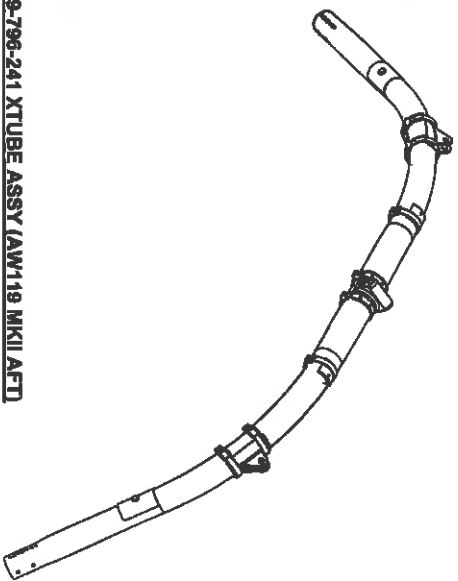
	Side A	Side B
Bending Passes	11	11
Crushing	6.9%	7%
Comments		

QC15 Inspection	DAG 38 9.99
Date	NOV 09 2016

Rev	Date	Change	Revised by	Approved
A	15.04.14	New Issue	KJ	
B	15.11.12	Min angle revised	KJ	
C	15.12.15	Dwg Rev updated	KJ	

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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 150896-145
160831

D119-796-241 XTUBE ASSY (AW119 MKII AFT)



- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: APPLY MATTE CLEAR COAT PER CSI 005 4.2
 - 3) TOLERANCES: PER DART CSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: ON INSIDE OF CLIP PER CSI 044 6.4
 - 7) WEIGHT: 26.26 lbs
 - 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLEND OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
 - 9) INSTALL D5122-1 CENTER SUPPORT HAND TIGHT ONLY. DO NOT TORQUE. INSTALL RED TAG TO INDICATE D5122-1 CENTER SUPPORT MUST BE BONDED PER IN-D119-786 PRIOR TO FLIGHT.
 - 10) PRIOR TO FINISHING, ABRASE MATING SURFACES OF D5138-1/2 AND SURFACE OF 410DS WASH 'N' WIPE DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5138-1/2 CONTACT PADS AND INSTALL AT AN 8.4° OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL MS21920-25 CLAMPS AND D5123-5 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
 - 11) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT HAS NOT BOTTOMED-OUT AFTER TORQUING AND THE NUT IS FACING AFT.
 - 12) PRIOR TO FINISHING, POSITION AND INSTALL D5134-04/1-042 DAMPER SUPPORTS USING JIG D110085. ABRASE MATING SURFACES OF THE D5134-04/1-042 DAMPER SUPPORTS AND CROSSTUBE WITH DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5134-04/1-042. INSTALL MS21920-25 CLAMPS AND D5123-1 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
 - 13) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5192-043 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 410DS WASH 'N' WIPE DEGREASER. INSTALL D5192-043 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE. 0.100" MIN THK LOCATE D5192-043 USING TOOL D110112.

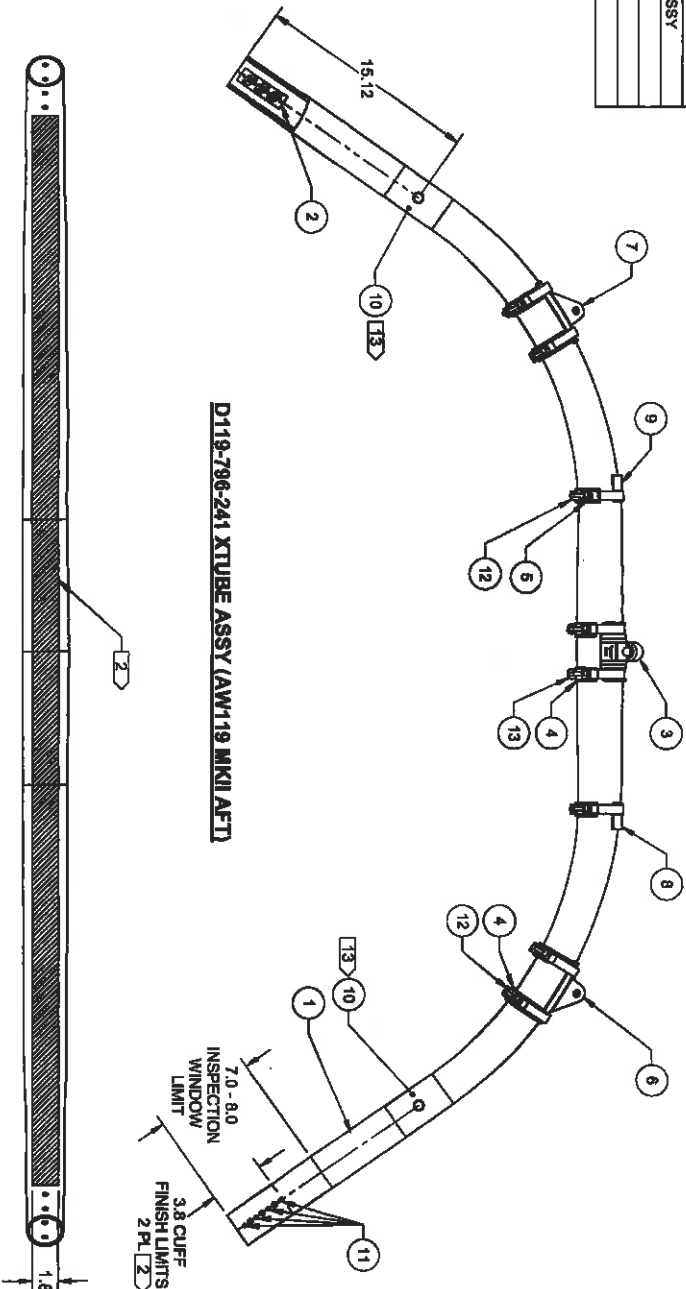
RELEASED
2015-11-04
EUC-15-648

APPROVED

REV.	DESCRIPTION	BY	DATE
A	NEW ISSUE	AP	14.08.87
B	ORIENTATION OF D5192-043 CENTER SUPPORT WAS CORRECTED. D5192-043 ADDED UNDER D5138-1/2. D5134-04/1-042 DAMPER SUPPORTS WERE REMOVED. REMOVED REDUNDANT INFORMATION.	AP	14.08.88
C	ORIENTATION OF D5192-043 CENTER SUPPORT WAS CORRECTED. D5192-043 ADDED UNDER D5138-1/2. D5134-04/1-042 DAMPER SUPPORTS WERE REMOVED. REMOVED REDUNDANT INFORMATION.	AP	14.10.89
D	ADD D5192-043 STEP POST (2X) MOVED INSPECTION WINDOW DETAIL TO SH. 1, MODIFIED NOTES ON SH. 1 & 3.	DB	14.11.89
E	D5192-043 WAS D5192-043 SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER.	DB	15.01.15
F	REMOVED PRIMER/PAIN ON CLIPS, 2.518 WAS 2.500 (0.018).	AP	15.02.03
G	FINISHING ORDER ADJUSTED, UPDATE BEND TOLERANCE AND TRN DETAIL TOLERANCE TO MATCH D119-786-141 DRWG.	AP	15.04.04
H	NOTE 9 RE-WRITTEN, BONDING INSTRUCTIONS MOVED TO IIN, SEE PREVIOUS REV FOR DETAIL B.	AP	15.07.08
I	D5123-108 MATERIAL, REPLACES D5123-108, D5138-1/2 & D5134-04/1-042 NOW INSTALLED ON PRIMER.	AP	15.10.13

DESIGN	AP	DRAWING NO.	DART AEROSPACE LTD
CHECKED	AS	HAWKSBURY, ONTARIO, CANADA	REV. 1
APPROVED	WM	D119-796-241	SHEET 1 OF 7
DATE	15.10.13	TITLE	XTUBE ASSY (AW119 MKII AFT)
SCALE		N/A	

ITEM	QTY	P/N	DESCRIPTION
1	1	D119-798-241	XTUBE ASSY (AW119 MKII AFT)
2	4	D2873-043	RADIUS BLOCK
3	1	D5123-1	CENTER SUPPORT
4	6	D5123-1	CLAMP CUSHION
5	2	D5123-5	CLAMP CUSHION
6	1	D5134-041	DAMPER SUPPORT ASSY, LH
7	1	D5134-042	DAMPER SUPPORT ASSY, RH
8	1	D5138-1	CONTACT PAD, LH
9	1	D5138-2	CONTACT PAD, RH
10	2	D5152-043	AFT POST MOUNT ASSY
11	16	CR3212-4-07	RIVET, BLIND CSK
12	8	MS21920-25	CLAMP
13	2	MS21920-28	CLAMP

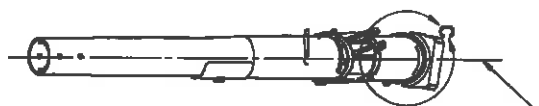


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2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	AS	DRAWING NO. D119-798-241
MFG. APPR.	LM	REV. 1
APPROVED	WM	SHEET 2 OF 7
DATE	15.10.13	SCALE
		TITLE
		XTUBE ASSY (AW119 MKII AFT) INTS

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D119-796-241 BND
CROSS-TUBE BENDING
PLANE

D5136-2 CONTACT PAD RH
D5123-5 CLAMP CUSHION
MS21820-25 CLAMP

D5134-042 DAMPER SUPPORT
D5123-1 CLAMP CUSHION (2 PL)
MS21820-25 CLAMP (2 PL)

D5182-043 AFT POST MOUNT ASSY

D5122-1 CENTER SUPPORT
D5123-1 CLAMP CUSHIONS (2 PL)
MS21820-28 CLAMP (2 PL)

10.38 TO
INBOARD EDGE
OF D5136-1/2

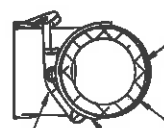
D5136-1 CONTACT PAD LH
D5123-5 CLAMP CUSHION
MS21820-25 CLAMP

D5134-041 DAMPER SUPPORT
D5123-1 CLAMP CUSHION (2 PL)
MS21820-25 CLAMP (2 PL)

D119-796-241 BND
CROSS-TUBE, AFT

D2873-043 NUT PLATE ASSEMBLY
CR3212-4-07 RIVET, BLIND CKS (4 PL)

APPLY PROSEAL 880
BETWEEN D5136-1/2 AND
D119-796-241 BND CROSS-TUBE



D5136-1 CONTACT PAD, LH
REF
D5136-2 CONTACT PAD, RH
REF

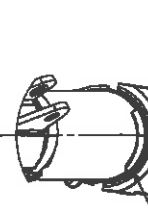
D5123-5 CLAMP CUSHION
REF

MS21820-25 CLAMP
REF

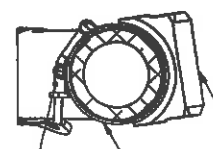
SECTION A-A
SCALE 2X

D119-796-241 BND
CROSS-TUBE BENDING
PLANE

D5122-1 CENTER SUPPORT
REF
D5136-1/2 CONTACT PAD
REF



DETAIL C
SCALE 2X



D5122-1 CENTER SUPPORT
REF

D5123-1 CLAMP CUSHION
REF

MS21820-28 CLAMP
REF

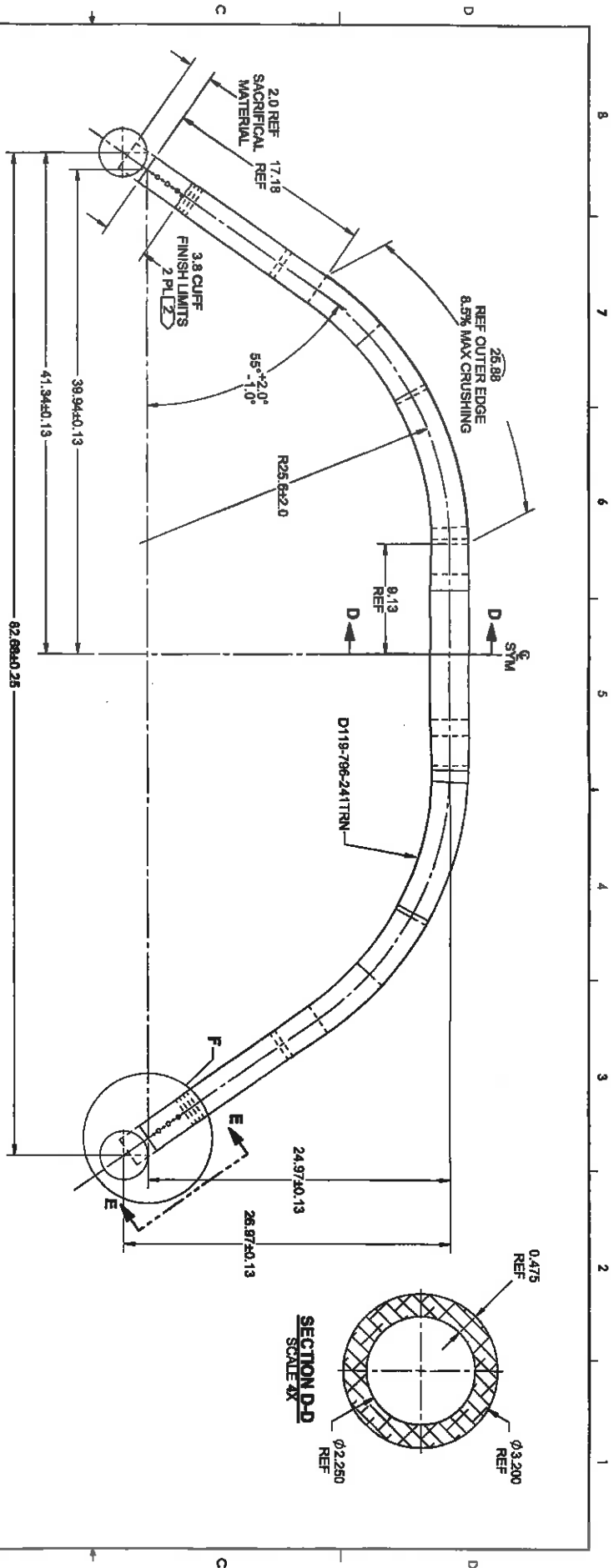
SECTION B-B
SCALE 2X

RELEASED
N 2015-11-04

APPROVED

DESIGN	AP	AP	DART AEROSPACE LTD
DRAWN	AP	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	AS	AS	DRAWING NO.
MFG. APPR.	JLM	JLM	D119-796-241
APPROVED	WM	WM	TITLE
DE APPR.	DS	DS	X-TUBE ASSY (AW119 MKII AFT)
DATE	15.10.13		SCALE
			NIS

THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE
DATE 15.10.13 BY 1301/1302/1303/1304/1305/1306/1307/1308/1309/1310/1311/1312/1313/1314/1315/1316/1317/1318/1319/1320/1321/1322/1323/1324/1325/1326/1327/1328/1329/1330/1331/1332/1333/1334/1335/1336/1337/1338/1339/1340/1341/1342/1343/1344/1345/1346/1347/1348/1349/1350/1351/1352/1353/1354/1355/1356/1357/1358/1359/1360/1361/1362/1363/1364/1365/1366/1367/1368/1369/1370/1371/1372/1373/1374/1375/1376/1377/1378/1379/1380/1381/1382/1383/1384/1385/1386/1387/1388/1389/1390/1391/1392/1393/1394/1395/1396/1397/1398/1399/1400/1401/1402/1403/1404/1405/1406/1407/1408/1409/1410/1411/1412/1413/1414/1415/1416/1417/1418/1419/1420/1421/1422/1423/1424/1425/1426/1427/1428/1429/1430/1431/1432/1433/1434/1435/1436/1437/1438/1439/1440/1441/1442/1443/1444/1445/1446/1447/1448/1449/1450/1451/1452/1453/1454/1455/1456/1457/1458/1459/1460/1461/1462/1463/1464/1465/1466/1467/1468/1469/1470/1471/1472/1473/1474/1475/1476/1477/1478/1479/1480/1481/1482/1483/1484/1485/1486/1487/1488/1489/1490/1491/1492/1493/1494/1495/1496/1497/1498/1499/1500/1501/1502/1503/1504/1505/1506/1507/1508/1509/1510/1511/1512/1513/1514/1515/1516/1517/1518/1519/1520/1521/1522/1523/1524/1525/1526/1527/1528/1529/1530/1531/1532/1533/1534/1535/1536/1537/1538/1539/1540/1541/1542/1543/1544/1545/1546/1547/1548/1549/1550/1551/1552/1553/1554/1555/1556/1557/1558/1559/1560/1561/1562/1563/1564/1565/1566/1567/1568/1569/1570/1571/1572/1573/1574/1575/1576/1577/1578/1579/1580/1581/1582/1583/1584/1585/1586/1587/1588/1589/1590/1591/1592/1593/1594/1595/1596/1597/1598/1599/1600/1601/1602/1603/1604/1605/1606/1607/1608/1609/1610/1611/1612/1613/1614/1615/1616/1617/1618/1619/1620/1621/1622/1623/1624/1625/1626/1627/1628/1629/1630/1631/1632/1633/1634/1635/1636/1637/1638/1639/1640/1641/1642/1643/1644/1645/1646/1647/1648/1649/1650/1651/1652/1653/1654/1655/1656/1657/1658/1659/1660/1661/1662/1663/1664/1665/1666/1667/1668/1669/1670/1671/1672/1673/1674/1675/1676/1677/1678/1679/1680/1681/1682/1683/1684/1685/1686/1687/1688/1689/1690/1691/1692/1693/1694/1695/1696/1697/1698/1699/1700/1701/1702/1703/1704/1705/1706/1707/1708/1709/1710/1711/1712/1713/1714/1715/1716/1717/1718/1719/1720/1721/1722/1723/1724/1725/1726/1727/1728/1729/1730/1731/1732/1733/1734/1735/1736/1737/1738/1739/1740/1741/1742/1743/1744/1745/1746/1747/1748/1749/1750/1751/1752/1753/1754/1755/1756/1757/1758/1759/1760/1761/1762/1763/1764/1765/1766/1767/1768/1769/1770/1771/1772/1773/1774/1775/1776/1777/1778/1779/1780/1781/1782/1783/1784/1785/1786/1787/1788/1789/1790/1791/1792/1793/1794/1795/1796/1797/1798/1799/1800/1801/1802/1803/1804/1805/1806/1807/1808/1809/1810/1811/1812/1813/1814/1815/1816/1817/1818/1819/1820/1821/1822/1823/1824/1825/1826/1827/1828/1829/1830/1831/1832/1833/1834/1835/1836/1837/1838/1839/1840/1841/1842/1843/1844/1845/1846/1847/1848/1849/1850/1851/1852/1853/1854/1855/1856/1857/1858/1859/1860/1861/1862/1863/1864/1865/1866/1867/1868/1869/1870/1871/1872/1873/1874/1875/1876/1877/1878/1879/1880/1881/1882/1883/1884/1885/1886/1887/1888/1889/1890/1891/1892/1893/1894/1895/1896/1897/1898/1899/1900/1901/1902/1903/1904/1905/1906/1907/1908/1909/1910/1911/1912/1913/1914/1915/1916/1917/1918/1919/1920/1921/1922/1923/1924/1925/1926/1927/1928/1929/1930/1931/1932/1933/1934/1935/1936/1937/1938/1939/1940/1941/1942/1943/1944/1945/1946/1947/1948/1949/1950/1951/1952/1953/1954/1955/1956/1957/1958/1959/1960/1961/1962/1963/1964/1965/1966/1967/1968/1969/1970/1971/1972/1973/1974/1975/1976/1977/1978/1979/1980/1981/1982/1983/1984/1985/1986/1987/1988/1989/1990/1991/1992/1993/1994/1995/1996/1997/1998/1999/2000/2001/2002/2003/2004/2005/2006/2007/2008/2009/2010/2011/2012/2013/2014/2015/2016/2017/2018/2019/2020/2021/2022/2023/2024/2025/2026/2027/2028/2029/2030/2031/2032/2033/2034/2035/2036/2037/2038/2039/2040/2041/2042/2043/2044/2045/2046/2047/2048/2049/2050/2051/2052/2053/2054/2055/2056/2057/2058/2059/2060/2061/2062/2063/2064/2065/2066/2067/2068/2069/2070/2071/2072/2073/2074/2075/2076/2077/2078/2079/2080/2081/2082/2083/2084/2085/2086/2087/2088/2089/2090/2091/2092/2093/2094/2095/2096/2097/2098/2099/2100/2101/2102/2103/2104/2105/2106/2107/2108/2109/2110/2111/2112/2113/2114/2115/2116/2117/2118/2119/2120/2121/2122/2123/2124/2125/2126/2127/2128/2129/2130/2131/2132/2133/2134/2135/2136/2137/2138/2139/2140/2141/2142/2143/2144/2145/2146/2147/2148/2149/2150/2151/2152/2153/2154/2155/2156/2157/2158/2159/2160/2161/2162/2163/2164/2165/2166/2167/2168/2169/2170/2171/2172/2173/2174/2175/2176/2177/2178/2179/2180/2181/2182/2183/2184/2185/2186/2187/2188/2189/2190/2191/2192/2193/2194/2195/2196/2197/2198/2199/2200/2201/2202/2203/2204/2205/2206/2207/2208/2209/2210/2211/2212/2213/2214/2215/2216/2217/2218/2219/2220/2221/2222/2223/2224/2225/2226/2227/2228/2229/2230/2231/2232/2233/2234/2235/2236/2237/2238/2239/2240/2241/2242/2243/2244/2245/2246/2247/2248/2249/2250/2251/2252/2253/2254/2255/2256/2257/2258/2259/2260/2261/2262/2263/2264/2265/2266/2267/2268/2269/2270/2271/2272/2273/2274/2275/2276/2277/2278/2279/2280/2281/2282/2283/2284/2285/2286/2287/2288/2289/2290/2291/2292/2293/2294/2295/2296/2297/2298/2299/2300/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D119-796-241BND CROSS-TUBE, AFT BENDING AND DRILLING DETAIL

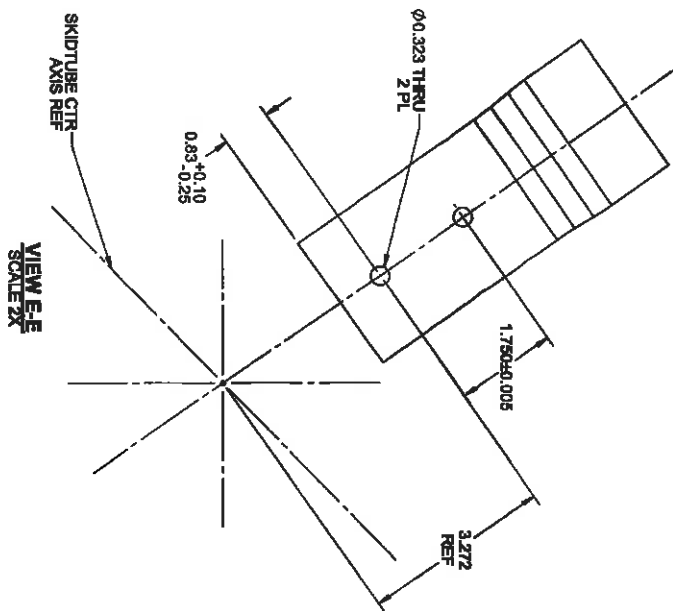
- NOTES:**
- 1) MATERIAL: MAKE FROM D119-796-241TRN
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
DO NOT APPLY PRIMER TO CUFFS IN LOCATION SHOWN. MASK PRIOR TO FINISHING
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 24.17 lbs
 - 8) PART IS SYMMETRICAL ABOUT CENTERLINE
 - 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 8.6% BASED ON OD.
 - 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSS-TUBE PER QSI 038
 - 11) THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	THAMESBURY, ONTARIO, CANADA
CHECKED	ALS	DRAWING NO. D119-796-241
MFG. APRL	JLM	REV. 1
APPROVED	WM	SHEET 4 OF 7
DE APRL	DS	SCALE
DATE	15.10.13	XTUBE ASSY (AW119 MKII AFT)
		INTS

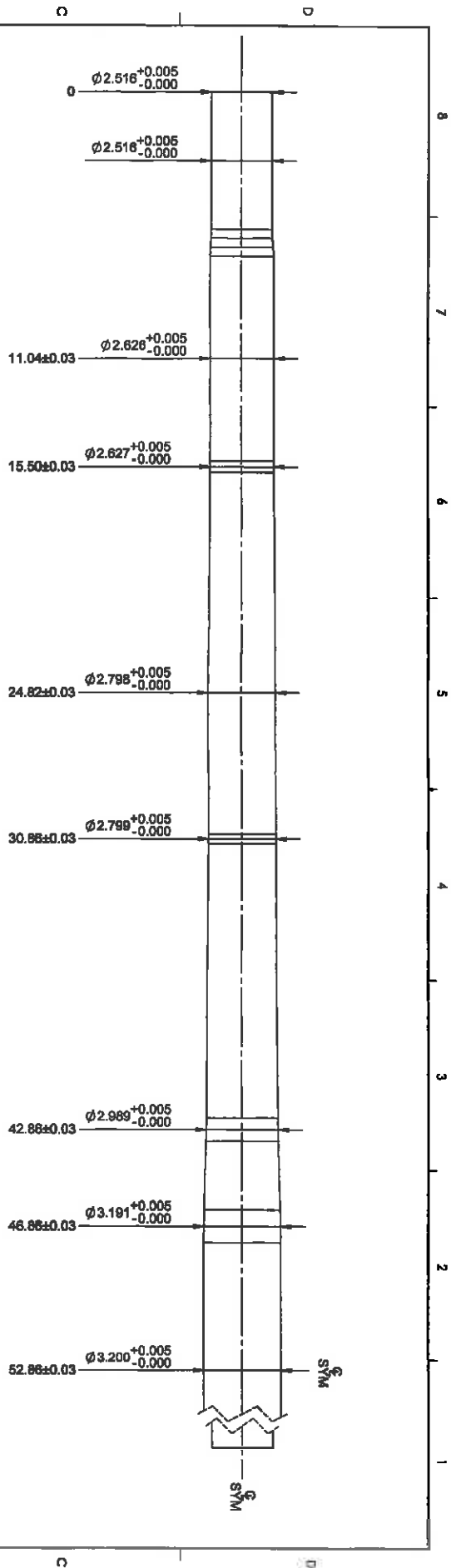
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THIS DOCUMENT EST UNCLASSIFIE ET EST RELEVE AU PUBLIC PAR LES ARCHIVES NATIONALES DU CANADA



RELEASED
2015-11-06

APPROVED

DART AEROSPACE USA, INC. KENT, WA		REV. 1 SHEET 8 OF 9 SCALE
DRAWING NO. D119-798-241	DATE 15.10.13	TITLE XTUBE ASSY (AW119 MKII A/F)
DESIGNED AP	CHECKED AUS	INFG. APPR. WLM
APPROVED DE APPR.	DS	NTS



D119-796-241TRN CROSS TUBE, AFT

DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	ALS	
ING. APPR.	JLM	
APPROVED	WM	
DE APPR.	DS	
DATE	15.10.13	

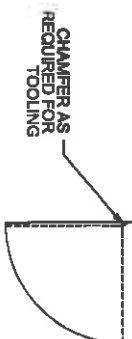
RELEASED
2015-11-04

APPROVED

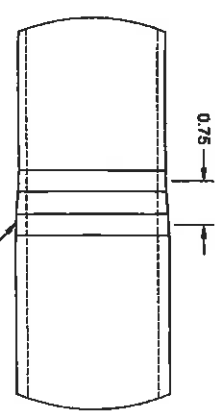
DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	ALS	
ING. APPR.	JLM	
APPROVED	WM	
DE APPR.	DS	
DATE	15.10.13	

DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	ALS	
ING. APPR.	JLM	
APPROVED	WM	
DE APPR.	DS	
DATE	15.10.13	

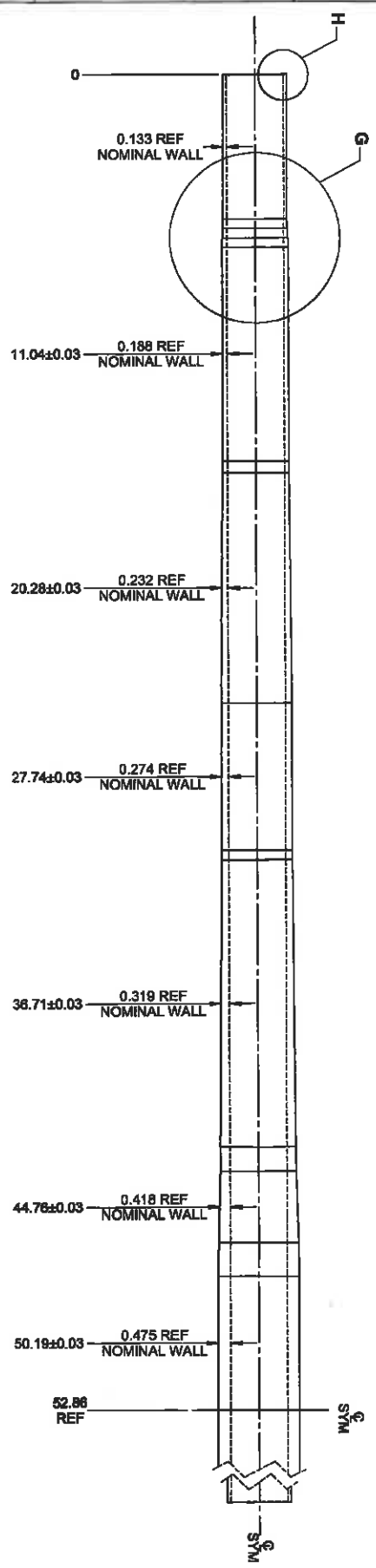
DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	ALS	
ING. APPR.	JLM	
APPROVED	WM	
DE APPR.	DS	
DATE	15.10.13	



DETAIL H
SCALE 4X



DETAIL G
SCALE 2X



D119-798-241 TRN CROSS TUBE AFT
SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS

RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA
CHECKED	AS	DRAWING NO.
MFG. APPR.	JLM	D119-798-241
APPROVED	WM	TITLE
DE APPR.	DS	XTUBE ASSY (AW119 MKII AFT)
DATE	15.10.13	SCALE
		NTS

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**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO30125	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 34249
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 8 CROSSTUBES, 6 STRUTS AND 16 END FITTINGS AS PER PO34249

6 STRUTS, ITEM ID# D4880-1, WORK ORDER ID# 152535

16 END FITTING, ITEM ID# D4884-1, WORK ORDER ID# 152652

4 FWD CROSSTUBES, ITEM ID# D119-796-141, WORK ORDER ID# 150979, 150391, 150392, 150393

4 AFT CROSSTUBES, ITEM ID# D119-796-241, WORK ORDER ID# 150596, 150597, 149516, 150154

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13							
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923, EMU. MPO15896, DEV. MPO11715, UV LIGHT M-20142						NOV 14 2016	 
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: RATHE MELIKIAN		NOV 14 2016



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO34249**

Purchase Order Date 11/9/2016

PO Print Date 11/15/2016

Page Number 4 of 5

Order From :
SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

VC-SKY001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 905-678-5636

Ship To Contact

Ship To Phone

Ship Via: Delivered

Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

Line Total: \$0.00

9 150596 D119-796-241 ✓ 11/15/2016
CROSSTUBE
Yes
11/15/2016

1.00

\$0.00 \$0.00

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

DAS
26
9-89

NOV 15 2016

Line Total: \$0.00

10 150597 D119-796-241 11/15/2016
CROSSTUBE
Yes
11/15/2016

1.00

\$0.00 \$0.00

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Line Total: \$0.00

11 149516 D119-796-241 11/15/2016
CROSSTUBE
Yes
11/15/2016

1.00

\$0.00 \$0.00

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Note:

11/15/2016

